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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/327,621	06/08/1999	HIROTO HORIKAWA	101809.03	5673

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EXAMINER

KIM, PETER B

ART UNIT PAPER NUMBER

2851

DATE MAILED: 10/22/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

A-17

Office Action Summary

Application No.

09/327,621

Applicant(s)

HORIKAWA, HIROTO

Examiner

Peter B Kim

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 August 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 26-94 and 97-104 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 26-37, 54-94 and 97-104 is/are allowed.
- 6) ☒ Claim(s) 38-42 and 45-53 is/are rejected.
- 7) ☒ Claim(s) 43, 44 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 08/935,445.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 38-45 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The newly amended Claim 38 recites "said second stage is a guideless stage having no associated guide member to guide its movement." The stationary member of the electromagnetic actuator seems to also function as a guide in the movement of the second stage according to the written description.

The remaining claims, not specifically mentioned, are rejected for incorporating the defects from the base claim by dependency.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 38-42, 45, and 46-53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishi (5,477,304) in view of Negishi (4,916,340).

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Nishi discloses in Figures 1 and 2 and column 8, line 14 through column 10, line 4, a projection exposure apparatus with a base (ref. 19) which holds the scanning stage (first stage) (ref. 20) and the fine adjustment stage (second stage) (ref. 21) which holds the mask (ref. 7) and movable mirror (ref. 33, 34A, 34B) for laser interferometers (ref. 35, 36A, 36B) which detect a displacement of the fine adjustment stage. Nishi also discloses the illumination system (ref. 22), projection optical system (ref. 13), substrate (ref. 14) and substrate stage with movable mirror and laser interferometer. Nishi also discloses driving the fine adjustment stage to prevent a positional error when the scanning stage is accelerated or decelerated (col. 13, line 28-60). Although Nishi does not disclose the substrate located on the fine adjustment stage and the scanning stage, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the substrate stage with such an arrangement because Nishi teaches such arrangement with the mask stage. Nishi discloses a means for moving the scanning stage with electromagnetic actuators (Fig. 3), but Nishi does not disclose electromagnetic actuators for moving the fine adjustment stage. Nishi also does not disclose a cooling unit that cools the actuators with the cooling fluid from the actuators arranged in the direction perpendicular to the scanning direction with respect to the scanning stage. Negishi discloses in Figures 1-4 and column 3, line 20 through column 7, line 35, electromagnetic actuators for moving the scanning stages of an exposure apparatus in x- and y-directions. Negishi discloses the stationary member having a coil of the electromagnetic actuator located on the stationary base relative to the moving stage and the movable magnetic portion located on the moving stage. Negishi

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discloses a pair of subactuators that are parallelly arranged (Fig. 1, ref. 70a, 70b).

Negishi also discloses cooling unit that cools the stationary member of the electromagnetic actuator in direction perpendicular and parallel to the scanning direction (Fig. 4). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide as the fine adjustment stages, the stage with electromagnetic actuators and the cooling unit in view of Negishi to the invention of Nishi in order to more efficiently produce semiconductor elements or liquid crystal display element which is well known product of scanning exposure apparatus. Also, since Negishi teaches cooling of the stationary member of the actuator, it would be obvious to provide cooling to the actuators of the scanning stage as well as the fine adjustment stage.

Allowable Subject Matter

5. Claims 26-37, 54-94, and 97-104 are allowed based on the applicant's arguments.
6. Claims 43 and 44 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

None of the prior art of record teaches the cooling unit circulating the cooling fluid from a portion near an optical path of the light beam from the interferometer toward the first coil member.

Response to Arguments

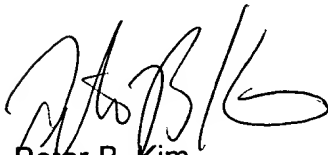
Applicant's recitation regarding the guideless second stage seems to be a new matter, and the recitation was not considered in the art rejection.

Applicant argues that Novak reference does not disclose cooling of the actuators for the fine adjustment stage. In response, the rejection is made based on Nishi in view of Negishi.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter Kim whose telephone number is (703) 305-0105. The examiner can normally be reached on Monday-Thursday from 6:30 AM to 4:00 PM. The examiner can also be reached on alternate Fridays during the same hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russ Adams, can be reached on (703) 308-2847. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.



Peter B. Kim
Patent Examiner
October 16, 2002